

a loading assembly for moving said first substrate from said first doping region to said second doping region, thereby enabling deposition of a first atomic monolayer in said first doping region, followed by diffusion of said first atomic monolayer in said second doping region.

47. (new) An atomic layer doping apparatus comprising:

a first atomic layer doping region for depositing a first dopant gas species on a first substrate as a monolayer, said first dopant gas species exhausted through a first gas port;

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a second atomic layer doping region for diffusing said first dopant gas species in said first substrate with a non-reactive gas species, said first and second doping regions being chemically isolated from one another, wherein said non-reactive gas species is exhausted through a second gas port; and

a loading assembly for moving said first substrate from said first doping region to said second doping region, thereby enabling deposition of a first atomic monolayer in said first doping region, followed by diffusion of said first atomic monolayer in said second doping region.